U.S. Measles Cases Triple in 2011

The number of measles cases reported in 2011 was more than triple the typical annual number seen in the past decade. These numbers, presented in the April 20th MMWR, mark a concerning resurgence of a disease which is classified as eliminated from domestic transmission in the US. The common thread appears to be unvaccinated individuals importing measles after exposure while travelling abroad, followed by subsequent domestic outbreaks of disease in unvaccinated contacts.

The CDC reported 222 cases of measles in 2011, associated with 17 separate outbreaks, compared to a rate which had been relatively stable at approximately 60 cases/year over the past decade. Of the 2011 cases, 90% were attributed epidemiologically or virologically to imported disease. Perhaps surprisingly, European countries including France, United Kingdom and Italy, were the major source countries. In 2011, Europe recorded almost 31,000 cases of measles. Vaccine status was known for 25,400 cases and nearly 21,000 occurred in unvaccinated individuals. France, Italy, Romania, Spain and Germany contributed more than 90% of cases; only Cyprus and Iceland were measles free in 2011.

Refusal to vaccinate is at the heart of the European resurgence of measles, a fact that serves as a warning of the consequences of anti-vaccination movements (Figure 1). The majority (86%) of the 222 US cases occurred in individuals who were unvaccinated or had unknown vaccine status. Of these, 85% were deemed eligible for measles vaccination based on current recommendations, 63% of whom were children. 18 cases occurred in infants too young for vaccination. The CDC reports that 75% of cases eligible for vaccination were unvaccinated due to philosophic, religious or personal objection, highlighting a growing challenge for front line health care providers. The threshold for herd protection from measles vaccine is approximately 85%, as can be seen in Figure 2 from the UK. Once vaccination rates reached the minimum threshold (due in part to the infamous Wakefield paper), measles cases rose dramatically. Measles vaccination rates in the US have remained near 90% in the US in the past decade, leaving a significant number of susceptible individuals and placing the US at risk of re-establishing endemic transmission.

REFERENCES

Emergence of Severe Hand, Foot and Mouth Disease Associated with Coxsackie Virus A6

A recent report from the CDC highlighted an increase in unusually severe hand, foot and mouth disease in children and adults in four states, associated with coxsackie virus A6. Numerous cases have been reported to the infectious disease consult service at Children’s Hospital Colorado. The purpose of this review is to highlight the presence this clinical entity and review the clinical, epidemiologic and virologic background of coxsackie A6 and other enteroviruses.

In the March 30, 2012 MMWR, the CDC reported 63 cases of hand, foot and mouth disease associated with atypical rash, high fever or unusual presentation. Of the 63, 38 were reported from Alabama, 7 from California, 17 from Nevada and 1 from Connecticut. The majority (63%) were children <2 years, but 24% were adults. Most cases were associated with contacts in a child care facility. Fever and rash were the most commonly reported manifestations, with frequent extension of rash beyond the hand, foot, mouth (and buttocks) of typical disease. There were no fatalities, but 19% required hospitalization, primarily for dehydration and pain. Neither meningitis nor myocarditis was reported. Of the 34 clinical specimens sent to the CDC, 25 (74%) were determined by RNA sequencing to be coxsackievirus A6 (CVA6).

Hand, foot and mouth disease is a syndrome caused primarily by group A coxsackieviruses, primarily coxsackievirus A16. The coxsackieviruses type A and B, poliovirus, and echoviruses are categorized as enteroviruses. Most enteroviral infections are asymptomatic or mild childhood febrile illnesses. They can also cause a wide spectrum of rashes that can be maculopapular, morbilliform, petechial, vesicular, or urticarial. The classic hand, foot and mouth (HFM) disease, often involves the buttocks and is characterized by papular or vesicular lesions on the skin and papular or ulcerative lesions of the buccal mucosa and tongue. Isolated enteroviral pharyngitis is known as herpangina.

Enteroviruses have tropism for the central nervous system, and are the most common cause of aseptic meningitis. Encephalitis is less common but occurs. The enteroviruses also have tropism for muscle, particularly cardiac, and are an important cause of myocarditis which is often severe. Myositis is less common and often involves the thigh muscles. Hemorrhagic conjunctivitis is a dramatic form of enteroviral disease which can occur in large outbreaks. Maternal enteroviral infection acquired shortly before birth can lead to devastating infection in the neonate.

Though enteroviral infections are commonly thought of as peaking in the summer, transmission occurs year round, particularly at lower latitudes. In the US there is some shifting of the most common circulating serotypes from year to year with occasional emergence of a previously uncommon serotype which can lead to more severe disease, as may be the case with the current emergence of coxsackievirus A6. Outbreaks of severe disease, and pronounced rash due to CVA6 have been reported in Taiwan, Japan, Singapore and Finland in the past few years. CVA6 is not a frequent cause of encephalitis or myocarditis, though 2 cases of encephalitis (out of 83 total) cases did occur in the Finnish outbreak.

As HFM is not a reportable disease, cases were communicated to the CDC in the context of consultation. Therefore, the numbers and geographic distribution do not represent a comprehensive epidemiologic assessment, and the wide distribution suggests the presence of this clinical entity across the US. Indeed, the ID service at Children’s has had a number of consultations related to cases with a similar presentation in the past 6 weeks. Due to the unusual and severe presentation, patients have been suspected to have more serious diseases prior to recognition of HFM, including neonatal herpes and Kawasaki disease in one child whose rash was associated with peeling skin. (In fact, peeling of hands and feet and loss of nails were a common occurrences in patients reported in the Taiwanese CVA6 outbreak). Clues to the correct diagnosis of HFM in severe cases include the presence of “typical” lesions within more widely distributed lesions, and exposure to children with similar presentation or day care. Confirmatory testing, using PCR from a throat swab or unroofed skin lesion is available when diagnostic uncertainty exists.

REFERENCES:


Antimicrobial Stewardship
Sarah Parker, MD Medical Director of Antimicrobial Stewardship
Jason Child, PharmD Pharmacy Director of Antimicrobial Stewardship

Did you know once daily cefdinir is not a good choice for community acquired pneumonia, and that amoxicillin is much better? Does your group have a question about when, where and why to use a certain antibiotic? The antimicrobial stewards are starting educational programs related to antibiotic use. We would love to hear your questions and help explain the logic behind antimicrobial choices! Recent involvement of the antimicrobial stewards has focused on antimicrobial choices for clinical care guidelines, including musculoskeletal infections, community acquired pneumonia and appendicitis. Contact us with questions or requests, sarah.parker@childrenscolorado.org.
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